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title: "QMM_Assignment4"
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date: "10/25/2021"
output:
  word_document: default
  pdf_document: default
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```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

Q1) Minimized cost of production and shipping :
Objective Function
Zmin = 622 X11 + 614 X12 + 630 X13 + 0 X14 + 641 X21 + 645 X22 + 649 X23
+ 0 X24
6 decision variables and 2 dummy variables are considered to equalize
supply and demand.
Constraints:
Supply Constraints
X11 + X12 + X13 + X14 = 100
X21 + X22 + X23 + X24 = 120
Demand Constraints
X11 + X21 = 80
X12 + X22 = 60
X13 + X23 = 70
X14 + X24 = 10
Where, Xij >=0 (i (Plant) =1,2 and j (warehouses) = 1,2,3,4)


```{r}
library(lpSolveAPI)
lprec<-make.lp(0,8)
lp.control(lprec,sense='min')

set.objfn(lprec,c(622,614,630,0,641,645,649,0))

add.constraint(lprec,rep(1,4),"=",100,indices =c(1,2,3,4))
add.constraint(lprec,rep(1,4),"=",120,indices =c(5,6,7,8))
add.constraint(lprec,rep(1,2),"=",80,indices =c(1,5))
add.constraint(lprec,rep(1,2),"=",60,indices =c(2,6))
add.constraint(lprec,rep(1,2),"=",70,indices =c(3,7))
add.constraint(lprec,rep(1,2),"=",10,indices=c(4,8))

solve(lprec)
get.objective(lprec)
get.constraints(lprec)
get.variables(lprec)

```
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